IN THE CLAIMS

Please delete all prior claim lists in the application and insert the following claim list.

1. (CURRENTLY AMENDED) A chelated complex comprising:

~~a bacteriocin selected from the group consisting of~~ nisin, ~~mutacin, subtilin, gallidermin, Pep5, epicidin 280, epilancin K7, lactocin S, streptococcin A-FF22, lacticin 481, salivaricin A, variacin, cypemycin, mersacidin, and ancovenin, actagardine, sublancin, plantaricin C,~~ fusion proteins thereof, and mixtures thereof; and

a detectable label comprising cobalt, wherein the complex is disposed within an isolated, *in vitro* sample to be tested.

2. (ORIGINAL) The complex of claim 1, wherein the complex binds to microbial cells selected from the group consisting of gram positive bacteria or mycobacteria.

3. (ORIGINAL) The complex of claim 1, wherein the complex binds to gram negative bacteria or fungi.

4. (PREVIOUSLY CANCELED) ~~The complex of claim 1, wherein the transition metal is selected from the group consisting of Cu, Co, Fe, Mn, Cr, Ni, Zn, Tc, and their isotopes.~~

5. (PREVIOUSLY CANCELED) ~~The complex of claim 1, wherein the lanthanide metal is selected from the group consisting of Gd, La, Eu, Tb, Dy, and Er.~~

6. (PREVIOUSLY CANCELED) ~~The complex of claim 1, wherein the lantibiotic is selected from the group consisting of nisin, mutacin, subtilin,~~

~~gallidermin, Pep5, epicidin 280, epilancin K7, lactocin S, streptococcin A-FF22, lacticin 481, salivaricin A, variacin, cypemycin, mersacidin, cinnamycin, duramycin and ancovenin, actagardine, sublancin, plantaricin C, fusion proteins thereof, and mixtures thereof, and fragments, homologs and variants thereof.~~

7. (PREVIOUSLY CANCELED) ~~The complex of claim 1, wherein the transition metal is Co.~~

8. (CANCEL) ~~The complex of claim 1, wherein the bacteriocin is selected from the group consisting of nisin, fusion proteins thereof, and mixtures thereof.~~

9. (PREVIOUSLY CANCELED) ~~The complex of claim 8, wherein the transition metal is Co or Cr.~~

10. (PREVIOUSLY CANCELED) ~~A method for synthesizing a bacteriocin-metal complex, comprising: (a) admixing (i) a water soluble salt of metal selected from the group consisting of transition metals and lanthanides with (ii) a bacteriocin selected from the group consisting of lantibiotics, nonlanthionine containing peptides, large heat labile proteins and complex bacteriocins, fusion proteins thereof, mixtures thereof, and fragments, homologs and variants thereof, in (iii) a solvent for the metal salt and the antibiotic, wherein the admixing is conducted under conditions effective to promote chelation of the metal by the bacteriocin, thereby forming a solution of the complex of the bacteriocin and the metal; (b) desalting the complex; and (c) isolating and drying the complex.~~

11. (PREVIOUSLY CANCELED) ~~The method of claim 10, wherein the complex binds to gram positive bacteria or mycobacteria.~~

12. (PREVIOUSLY CANCELED) ~~The method of claim 10, wherein the complex binds to gram negative bacteria or fungi.~~

13. (PREVIOUSLY CANCELED) ~~The method of claim 10, wherein the solvent comprises aqueous buffer.~~

14. (PREVIOUSLY CANCELED) ~~The method of claim 10, wherein step (b) comprises dialysis.~~

15. (PREVIOUSLY CANCELED) ~~The method of claim 10, wherein step (b) comprises gel filtration.~~

16. (PREVIOUSLY CANCELED) ~~The method of claim 10, wherein step (c) comprises freeze-drying.~~

17. (PREVIOUSLY CANCELED) ~~The method of claim 10, wherein step (c) comprises spray drying.~~

18. (PREVIOUSLY CANCELED) ~~A method for forming a bacteriocin-metal complex *in situ* on a sample to be tested, comprising applying to a sample to be tested (i) a water-soluble salt of metal selected from the group consisting of transition metals and lanthanides and (ii) a bacteriocin selected from the group consisting of lantibiotics, non-lanthionine containing peptides, large heat labile proteins and complex bacteriocins, fUsion proteins thereof, mixtures thereof, and fragments, homologs and variants thereof, in (iii) a solvent for the metal salt and the bacteriocin.~~

19. (PREVIOUSLY CANCELED) ~~The method of claim 18, wherein the bacteriocin-metal complex binds to a target pathogen.~~

20. (PREVIOUSLY CANCELED) ~~The method of claim 18, wherein the transition metal is selected from the group consisting of Cu, Co, Fe, Mn, Cr, Ni, Zn, Tc, and their isotopes.~~

21. (PREVIOUSLY CANCELED) ~~The method of claim 18, wherein the lanthanide metal is selected from the group consisting of Gd, La, Eu, Tb, Dy, Er, and their isotopes.~~

22. (PREVIOUSLY CANCELED) ~~The method of claim 18, further comprising contacting the sample with an oxidizable substrate and a source of peroxide and measuring luminescence from the sample.~~

23. (PREVIOUSLY CANCELED) ~~The method of claim 22, wherein unbound bacteriocin and metal is removed from the sample.~~

24. (PREVIOUSLY CANCELED) ~~The method of claim 18, wherein a portion of the sample is removed for detection of pathogens.~~

25. (PREVIOUSLY CANCELED) ~~The method of claim 24, wherein the portion of sample is removed by washing.~~

26. (PREVIOUSLY CANCELED) ~~The method of claim 24, wherein the portion of sample is removed and pathogens are suspended in aqueous buffer solution.~~

27. (PREVIOUSLY CANCELED) ~~The method of claim 24, wherein the portion of sample removed for detection of pathogens is concentrated.~~

28. (PREVIOUSLY CANCELED) ~~The method of claim 27, wherein the pathogens are concentrated by a method selected from the group consisting of centriffigation, filtration or adsorption.~~

29. (PREVIOUSLY CANCELED) ~~The method of claim 28, wherein the adsorption is performed by adsorptive particles selected from the group consisting of immuno-microbeads and phagemicrobeads.~~

30. (PREVIOUSLY CANCELED) ~~The method of claim 22, wherein the oxidizable substrate is selected from the group of chemiluminescent substrates consisting of luminol and its derivatives, lucigenin, penicillin, luciferin and other polyaromatic phthalylhydrazides.~~

31. (PREVIOUSLY CANCELED) ~~The method of claim 22, wherein the peroxide source is hydrogen peroxide, benzoyl peroxide or cumyl peroxide.~~

32. (PREVIOUSLY CANCELED) ~~The method of claim 22, wherein the peroxide source is an enzyme such as glucose oxidase or amino acid oxidase.~~

33. (PREVIOUSLY CANCELED) ~~A diagnostic test for conducting a chemiluminescent assay of bacteria or fungi, comprising: the complex of claim 1, a peroxide source and oxidizable substrate.~~

34. (PREVIOUSLY CANCELED) ~~The diagnostic test of claim 33, wherein the oxidizable substrate is selected from the group of chemiluminescent substrates consisting of luminol and its derivatives, lucigenin, penicillin, luciferin and other polyaromatic phthalylhydrazides.~~

35. (PREVIOUSLY CANCELED) ~~The diagnostic test of claim 33, wherein the peroxide source is hydrogen peroxide, benzoyl peroxide or cumyl peroxide.~~

36. (PREVIOUSLY CANCELED) ~~The diagnostic test of claim 33, wherein the peroxide source is an enzyme such as glucose or amino acid oxidase.~~

37. (PREVIOUSLY CANCELED) ~~The diagnostic test of claim 33, wherein the bacteria are gram positive bacteria, gram negative bacteria or mycobacteria.~~

38. (PREVIOUSLY CANCELED) ~~The diagnostic test of claim 33, wherein fungi are detected.~~

39. (PREVIOUSLY CANCELED) ~~A method for conducting a chemiluminescent assay of pathogens comprising (a) contacting a sample with the complex of claim 1, (b) removing unbound complex and (c) detecting pathogens by contacting the sample with a peroxide source and an oxidizable substrate.~~

40. (PREVIOUSLY CANCELED) ~~The method of claim 39, wherein pathogens are isolated from the sample prior to contacting the sample with the chelated complex.~~

41. (PREVIOUSLY CANCELED) ~~The method of claim 39, wherein pathogens are isolated from the sample using antibody attached microbeads or phage attached microbeads.~~

42. (PREVIOUSLY CANCELED) ~~The method of claim 39, wherein the microbeads comprise a magnetic material.~~

43. (PREVIOUSLY CANCELED) ~~The diagnostic test of claim 33, further comprising combining bacteria or fungi labeled with the chelated complex of claim 1~~

~~with peroxide with an oxidizable substrate, and detecting light emission in a photodetector.~~

44. (PREVIOUSLY CANCELED) ~~The method of claim 39, wherein the peroxide source is hydrogen peroxide, benzoyl peroxide and cumyl peroxide.~~

45. (PREVIOUSLY CANCELED) ~~The method of claim 39, wherein the oxidizable substrate is selected from the group consisting of luminol and its derivatives, lucigenin, penicillin, luciferin and other polyaromatic phthalylhydrazides.~~

46. (PREVIOUSLY CANCELED) ~~The method of claim 39, wherein the pathogens are gram positive bacteria or mycobacteria.~~

47. (PREVIOUSLY CANCELED) ~~The method of claim 39, wherein the pathogens are gram negative bacteria or fungi.~~

48. (PREVIOUSLY CANCELED) ~~A therapeutic treatment comprising a chelated complex comprised of(a) lantibiotics, non-lanthionine containing peptides, large heat labile proteins and complex bacteriocins, fusion proteins thereof, mixtures thereof, and fragments, homologs and variants thereof, and (b) a detectable label comprising a transition or lanthanide metal, wherein the tissue of a patient is treated with the chelated complex.~~

49. (PREVIOUSLY CANCELED) ~~The therapeutic treatment of claim 48, wherein the transition metal is Cobalt.~~

50. (PREVIOUSLY CANCELED) ~~The therapeutic treatment of claim 48, wherein the lantibiotic is nisin.~~

51. (PREVIOUSLY CANCELED) ~~The diagnostic test of claim 33, wherein the bacteria are selected from the group consisting of lactococci, leuconostocs, micrococci, pediococci, actinomyces, mycobacteria, pneumococci, streptococci, staphylococci, acrobic bacilli, anaerobic clostridia, listeria and nocardia.~~

52. (PREVIOUSLY CANCELED) ~~The diagnostic test of claim 51, wherein the mycobacteria are selected from the group consisting of *mycobacterium tuberculosis, mycobacterium avium, mycobacterium paratuberculosis, mycobacterium bovis* and *mycobacterium leprae.*~~

53. (PREVIOUSLY CANCELED) ~~The diagnostic test of claim 51, wherein the bacteria are selected from the group consisting *of Bacillus anthracis, Clostridium botulinum* and *Clostridiumperfringes.*~~

54. (PREVIOUSLY CANCELED) ~~The method of claim 39, wherein the bacteria are selected from the group consisting of lactococci, leuconostocs, micrococci, pediococci, actinomyces, mycoabacteria, pneumococci, streptococci, staphylococci, acrobic bacilli, anaerobic clostridia, listeria and nocardia.~~

55. (PREVIOUSLY CANCELED) ~~The method of claim 54, wherein the mycobacteria are selected from the group consisting of *mycobacterium tuberculosis, inycobacterium avium, mnycobacterium paratuberculosis, mycobacterium bovis* and *mycobacterium leprae.*~~

56. (PREVIOUSLY CANCELED) ~~The method of claim 54, wherein the bacteria are selected from the group consisting of *Bacillus anthracis, Clostridinin botulinum* and *Clostridium perfringes.*~~

57. (PREVIOUSLY CANCELED) ~~A method for synthesizing a lantibiotic - metal complex, comprising (a) admixing (i) a water soluble salt of metal selected from the group consisting of transition metals and lanthanides with (ii) a lantibiotic selected from the group consisting of nisin, mutacin, subtilin, gallidermin, PepS, epicidin 280, epilancin K7, lactocin S, streptococcin A-FF22, lacticin 481, salivaricin A, variacin, cypemycin, mersacidin, cinnamycin, duramycin and ancovenin, actagardine, sublancin, plantaricin C, fusion proteins thereof, mixtures thereof, and fragments, homologs and variants thereof, in (iii) a solvent for the metal salt and the lantibiotic, wherein the admixing is conducted under conditions effective to promote chelation of the metal by the lantibiotic, thereby forming a solution of the complex of the lantibiotic and the metal, (b) desalting the complex, and (c) isolating and drying the complex.~~

58. (PREVIOUSLY CANCELED) ~~The method of claim 57, wherein the solvent comprises aqueous buffer.~~

59. (PREVIOUSLY CANCELED) ~~The method of claim 57, wherein step (b) comprises dialysis.~~

60. (PREVIOUSLY CANCELED) ~~The method of claim 57, wherein step (b) comprises gel filtration.~~

61. (PREVIOUSLY CANCELED) ~~The method of claim 57, wherein step (c) comprises freeze drying.~~

62. (PREVIOUSLY CANCELED) ~~The method of claim 57, wherein step (c) comprises spray drying.~~

63. (PREVIOUSLY CANCELED) ~~The complex of claim 1, wherein the lantibiotic is selected from the group consisting of nisin, mutacin, subtilin,~~

~~gallidermin, Pep5, epicidin 280, epilancin K7, lactocin 5, streptococcin A-FF22, lacticin 481, salivaricin A, variacin, cypemycin, mersacidin, cinnamycin, duramycin and ancovenin, actagardine, sublancin, plantaricin C, mixtures thereof and fragments, analogs and variants thereof, and the lanthanide metal is selected from the group consisting of Gd, La, Eu, Tb, Dy, and Er, and their isotopes.~~

64. (PREVIOUSLY CANCELED) ~~The complex of claim 1, wherein the lantibiotic is selected from the group consisting of nisin, mutacin, subtilin, gallidermin, Pep5, epicidin 280, epilancin K7, lactocin S, streptococcin A-FF22, lacticin 481, salivaricin A, variacin, cypemycin, mersacidin, cinnamycin, duramycin and ancovenin, actagardine, sublancin, plantaricin C, mixtures thereof and fragments, analogs and variants thereof, and the transition metal is selected from the group consisting of Cu, Co, Fe, Mn, Cr, Ni, Zn, Tc, and their isotopes.~~

65. (CANCEL) ~~The complex of claim 1, wherein the bacteriocin comprises an amino acid sequence encoded by the nucleic acid sequence of SEQ ID NO:8.~~

66. (CANCEL) ~~The complex of claim 1, wherein the bacteriocin comprises an amino acid sequence as shown in SEQ ID NOS: 1-7, or the amino acid sequence of SEQ ID NOS: 1-7 having a substitution, deletion or addition of from 1 to 3 amino acids.~~

67. (CANCEL) ~~The complex of claim 1, wherein the bacteriocin comprises an amino acid sequence as shown in SEQ ID NOS: 1-7 or an amino acid sequence that is 90% homologous with the amino acid sequences of SEQ ID NOS: 1-7.~~

68. (PREVIOUSLY CANCELED) ~~A method for forming a bacteriocin-metal complex *in situ* on a sample to be tested, comprising applying to a sample to be tested: (i) a water-soluble salt of metal selected from the group consisting of transition metals~~

and lanthanides and (ii) a bacteriocin, wherein the bactenocin comprises the amino acid sequence encoded by the nucleic acid sequence of SEQ ID NO:8 or a nucleic acid sequence that hybridizes with SEQ ID NO:8 under stringent conditions, in (iii) a solvent for the metal salt and the bacteriocin.

69. (PREVIOUSLY CANCELED) A method for forming a bacteriocin-metal complex *in situ* on a sample to be tested, comprising applying to a sample to be tested: (i) a water-soluble salt of metal selected from the group consisting of transition metals and lanthanides and (ii) a bacteriocin, wherein the bactenoem comprises the amino acid sequence of SEQ ID NOS: 1-7, or the amino acid sequence of SEQ ID NOS: 1-7 having a substitution, deletion or addition of 1 to 3 amino acids; in (iii) a solvent for the metal salt and the bacteriocin.

70. (PREVIOUSLY CANCELED) A method for forming a bacteriocin-metal complex *in situ* on a sample to be tested, comprising applying to a sample to be tested: (i) a water-soluble salt of metal selected from the group consisting of transition metals and lanthanides and (ii) a bacteriocin, wherein the bacteriocin comprises the amino acid sequence of SEQ ID NOS: 1-7 or an amino acid sequence that is 90% homologous with the amino acid sequence of SEQ ID NOS: 1-7, in (iii) a solvent for the metal salt and the bacteriocin.

71. (PREVIOUSLY CANCELED) A method for conducting a chemiluminescent agglutination assay for an analyte comprising (a) providing *Staphylococcus aureus* cells with antibodies to the analyte bound thereto, (b) contacting a sample with the *Staphylococcus* cells, (c) allowing the antibodies to bind to the analyte and agglutinate the *Staphylococcus* cells, (d) separating the agglutinated cells from the non-agglutinated cells, (e) contacting the agglutinated cells with a bacteriocin and a transition or lanthanide metal, (f) optionally removing unbound complex and (g)

~~detecting the presence of the analyte by contacting the sample with a peroxide source and an oxidizable substrate.~~

72. (PREVIOUSLY CANCELED) ~~A method for conducting a chemiluminescent agglutination assay for viruses or prions comprising (a) providing *Staphylococcus aureus* cells with antibodies to viruses or prions bound thereto, (b) contacting a sample with the *Staphylococcus* cells, (c) allowing the antibodies to bind to viruses or prions and agglutinate the *Staphylococcus* cells, (d) separating the agglutinated cells from non-agglutinated cells, (e) contacting the agglutinated cells with a bacteriocin and a transition or lanthanide metal, (f) optionally removing unbound complex and (g) detecting the presence of viruses or prions by contacting the sample with a peroxide source and an oxidizable substrate.~~

73. (REINSTATED & AMENDED HEREIN; FORMERLY CLAIM 39.) A method for conducting a chemiluminescent assay of pathogens comprising:

(a) contacting a sample with the complex of claim 1, under conditions and for a time sufficient to allow the complex to bind with pathogens present in the sample;

(b) removing any unbound complex; and

(c) detecting the pathogens by contacting the sample with a peroxide source and an oxidizable substrate.

74. (REINSTATED & AMENDED HEREIN; FORMERLY CLAIM 40.) The method of claim ~~39~~ 73, wherein pathogens are isolated from the sample prior to contacting the sample with the ~~chelated~~ complex.

75. (REINSTATED & AMENDED HEREIN; FORMERLY CLAIM 41.) The method of claim ~~39~~ 74, wherein pathogens are isolated from the sample using antibody-attached microbeads or phage-attached microbeads.

76. (REINSTATED & AMENDED HEREIN; FORMERLY CLAIM 42.) The method of claim ~~39~~ 75, wherein the microbeads comprise a magnetic material.

77. (REINSTATED & AMENDED HEREIN; FORMERLY CLAIM 44.) The method of claim ~~39~~ 73, wherein the peroxide source is selected from the group consisting of hydrogen peroxide, benzoyl peroxide and cumyl peroxide.

78. (REINSTATED & AMENDED HEREIN; FORMERLY CLAIM 45.) The method of claim ~~39~~ 73, wherein the oxidizable substrate is selected from the group consisting of luminol and its derivatives, lucigenin, penicillin, luciferin, and ~~other~~ polyaromatic phthalylhydrazides.

79. (REINSTATED & AMENDED HEREIN; FORMERLY CLAIM 46.) The method of claim ~~39~~ 73, wherein the pathogens are gram positive bacteria or mycobacteria.

80. (REINSTATED & AMENDED HEREIN; FORMERLY CLAIM 47.) The method of claim ~~39~~ 73, wherein the pathogens are gram negative bacteria or fungi.

81. (REINSTATED & AMENDED HEREIN; FORMERLY CLAIM 54.) The method of claim ~~39~~ 73, wherein the bacteria are selected from the group consisting of lactococci, leuconostocs, micrococci, pediococci, actinomyces, mycoabacteria, pneumococci, streptococci, staphylococci, aerobic bacilli, anaerobic clostridia, listeria and nocardia.

82. (REINSTATED & AMENDED HEREIN; FORMERLY CLAIM 55.) The method of claim ~~54~~ 81, wherein the mycobacteria are selected from the group consisting of *mycobacteriurn tuberculosis, lnycobacterium avium, mnycobacterium paratuberculosis, mycobacterium bovis* and *mycobacterium leprae.*